

TWO NEW PHYCITINE MOTHS OF THE GENUS *COENOCHROA*
(LEPIDOPTERA: PYRALIDAE) FROM BRAZIL

JAY C. SHAFFER

Department of Biology, George Mason University, Fairfax, Virginia 22030.

Abstract.—Two new sibling species of phycitine moths, *Coenochroa dentata* n. sp. and *C. prolixa* n. sp., are described from Rio Brillhante, Mato Grosso do Sul, Brazil. Reference is made to North American species of the genus. Adult moths and genitalia of both sexes are illustrated and scanning electron micrographs of denuded head capsules and of certain genital structures are included.

Key Words: *C. dentata*, *C. prolixa*, taxonomy, neotropics

The genus *Coenochroa* Ragonot, 1887 was previously known from three species, all North American. *C. bipunctella* inhabits the Atlantic and Gulf coastal plains, while *illibella* and *californiella* are mainly western, the former extending eastward in the Great Lakes region, the latter ranging south into Panama (Shaffer 1984).

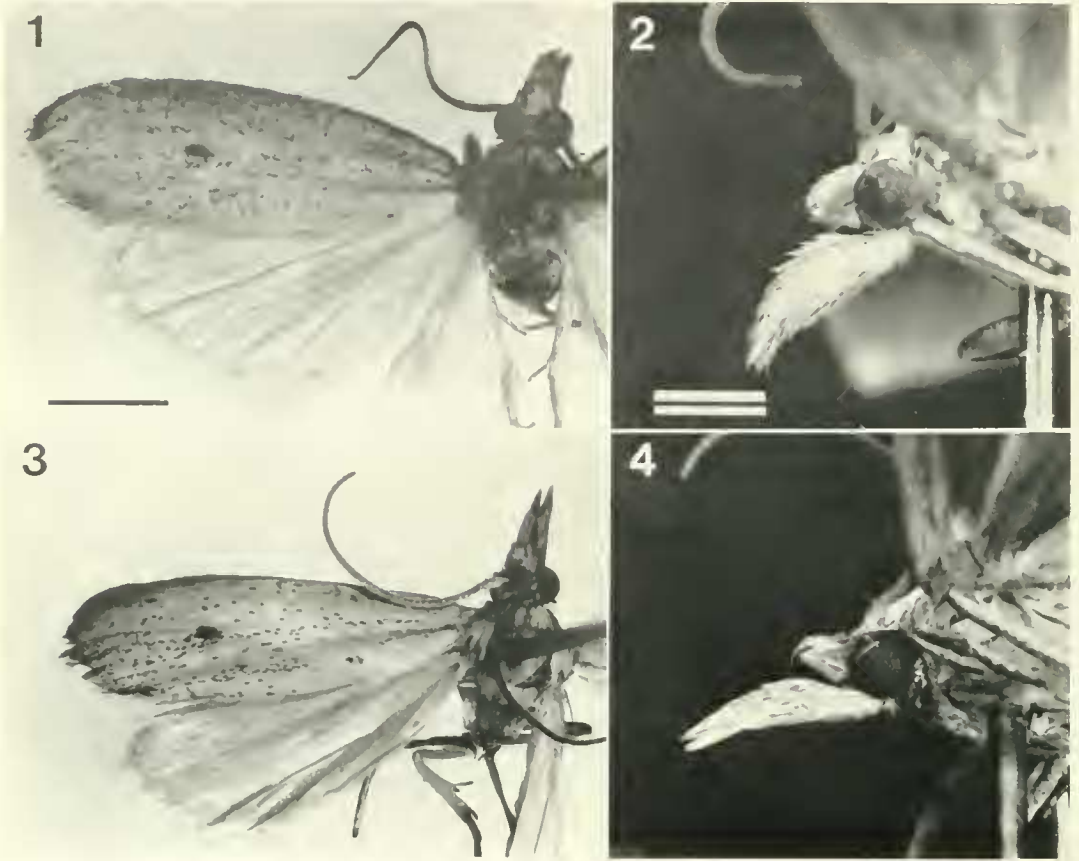
While recently examining a series of pyralid moths collected by Dr. Vitor Becker in Brazil I segregated for further study a small series of specimens from Rio Brillhante, Mato Grosso do Sul which externally resemble *californiella* in size, wing pattern, venation, and frons modification. On dissection these proved to be two undescribed sibling species. The male and female genitalia of these two species fit well within the parameters of *Coenochroa*, are quite distinct in spite of the great external similarity of these moths, and exhibit unusual apomorphies in the male genitalia of both species. These two Brazilian species are described herein with a view to inclusion in the pyralid section of the Checklist of Neotropical Lepidoptera (J. B. Heppner, ed., in prep.).

Although a review of the genus would be premature, I have included a key to the five

known species. It is useful to know that: a) only *illibella* has a white costal band, b) all but *illibella* have the dark forewing spot, c) *bipunctella* is the only species in the southeastern U.S.A., d) *californiella* and *illibella* are sympatric and have very similar genitalia for both sexes, but are readily distinguished externally, e) *dentata* and *prolixa* are sympatric and difficult to separate externally, but both sexes have distinctive genitalia. One should refer to Shaffer (1968, 1984) for illustrations and other information pertaining to North American species of *Coenochroa*.

KEY TO SPECIES OF *COENOCHROA*

1. Male genitalia with valve rounded, unmodified, not dentate; forewing spot present or absent (*illibella*); costal band present (*illibella*) or absent; frons with central beak minute to prominent; North and Central America 2
- Male genitalia with valve dentate; forewing with dark spot at lower outer angle of cell; costal band absent; frons with central beak minute (e.g. Fig. 17) or absent (Fig. 20), varying intraspecifically; Brazil 4
2. Forewing spot absent; white costal band present; frons with central beak large, protruding well beyond rim of frons modification; western North America and Great Lakes region
..... *illibella* (Hulst)



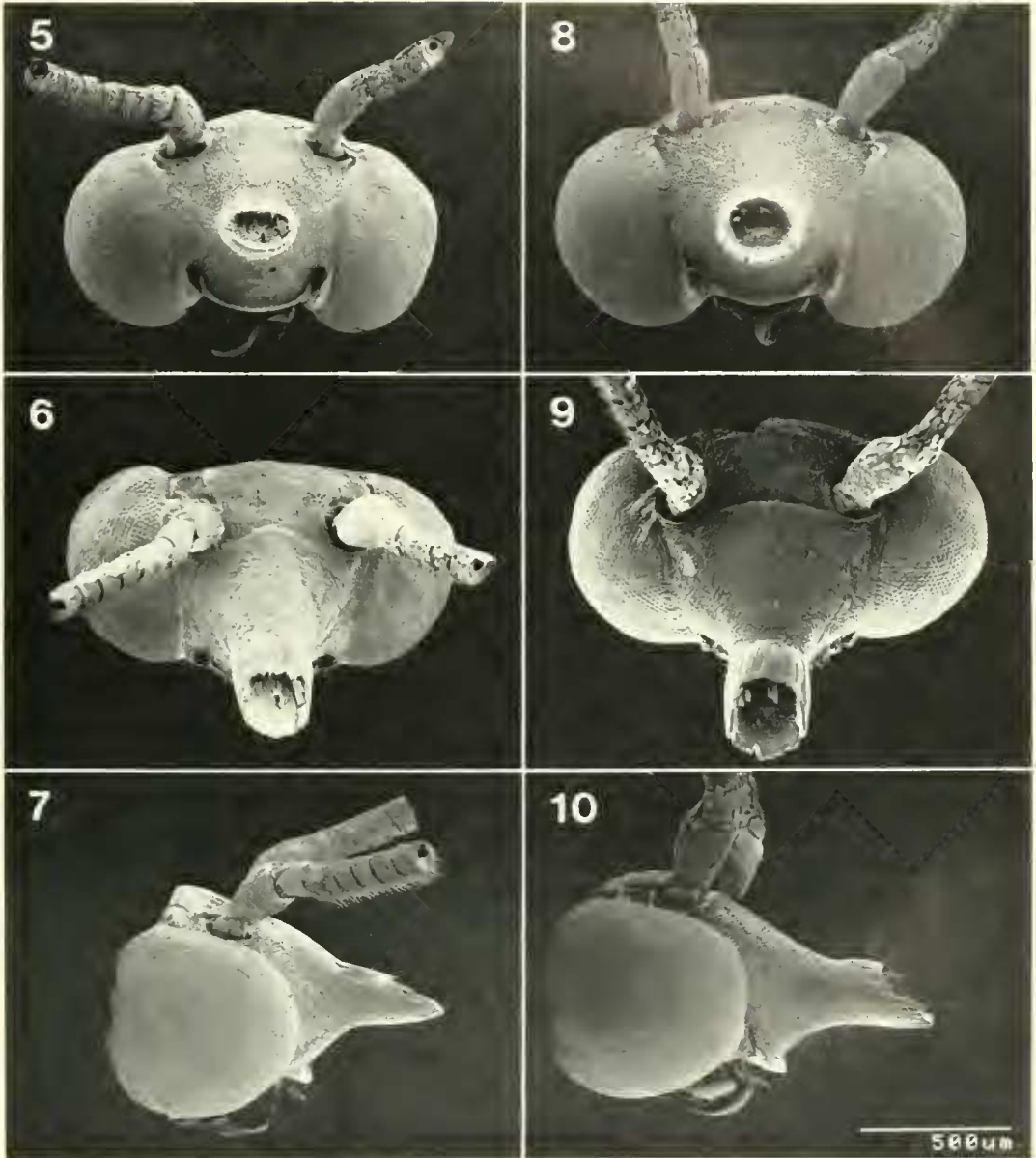
Figs. 1-4. Adult moths and head profiles. 1-2, *Coenochroa dentata*, male paratype (USNM slide no. 57864). 3-4, *Coenochroa prolixa*, male paratype (USNM slide no. 57867). Scale bar = 2 mm (Figs. 1, 3), 1 mm (Figs. 2, 4).

- Forewing with dark spot at lower outer angle of cell; costal band absent; frons with the central beak small to absent, not extending beyond rim 3
- 3. Central beak of frons extending to rim; aedeagus with vesica bearing numerous small cornuti and single larger one; Atlantic and Gulf coastal plains *bipunctella* (Barnes and McDunnough)
- Central beak of frons minute, not reaching rim; aedeagus with a single long slender cornutus; western North America through Central America *californiella* Ragonot
- 4. Forewing light yellowish brown, darker anterior to cell; costa of valve with serrate flange (Fig. 24), vinculum with saccus very short (Fig. 23); ductus bursae straight (Fig. 38) *dentata* Shaffer

- Forewing pale yellow, not darker anterior to cell; costa of valve with single large tooth, saccus very long (Fig. 32); ductus bursae with loop (Fig. 41) *prolixa* Shaffer

METHODS

Macerated and cleared genitalia were stained with 0.3% aqueous solution of mercurochrome, mounted in Euparal, and photographed with a Nikon AFM camera on a Nikon S-Ke II microscope set for Koehler illumination. All scanning electron microscope work was done with a Hitachi S-530 SEM at 5 Kv. One head capsule for each of the two species was macerated in hot 10%



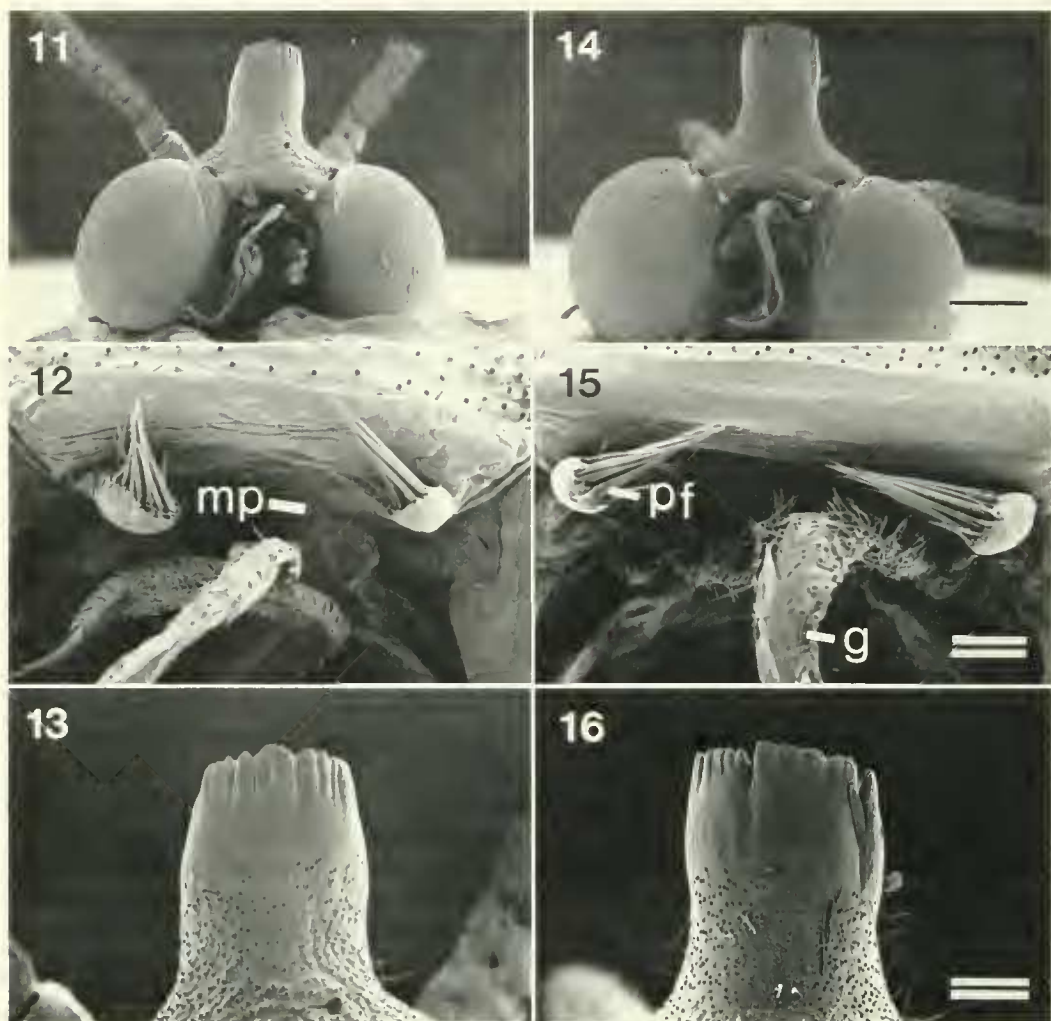
Figs. 5–10. Scanning electron micrographs of denuded head capsules in frontal (top row), anterodorsal (middle row), and lateral (bottom row) views, all to same scale. 5–7, *Coenochroa dentata*, paratype (USNM slide no. 57865). 8–10, *Coenochroa prolixa*, holotype (J. Shaffer slide no. 2239). Scale bar = 0.5 mm.

KOH, cleaned, denuded of scales, mounted from 95% ethanol using silver paint, air dried, and sputter coated with gold. The *dentata* valve (Figs. 30–31) was similarly treated. All original photographs were taken on Kodak Technical Pan Film 2415.

Coenochroa dentata Shaffer,
NEW SPECIES

Figs. 1, 2, 5–7, 11–13, 17–19,
23–31, 38–40

Diagnosis.—Externally very similar to *prolixa*, but with forewing ground light yel-

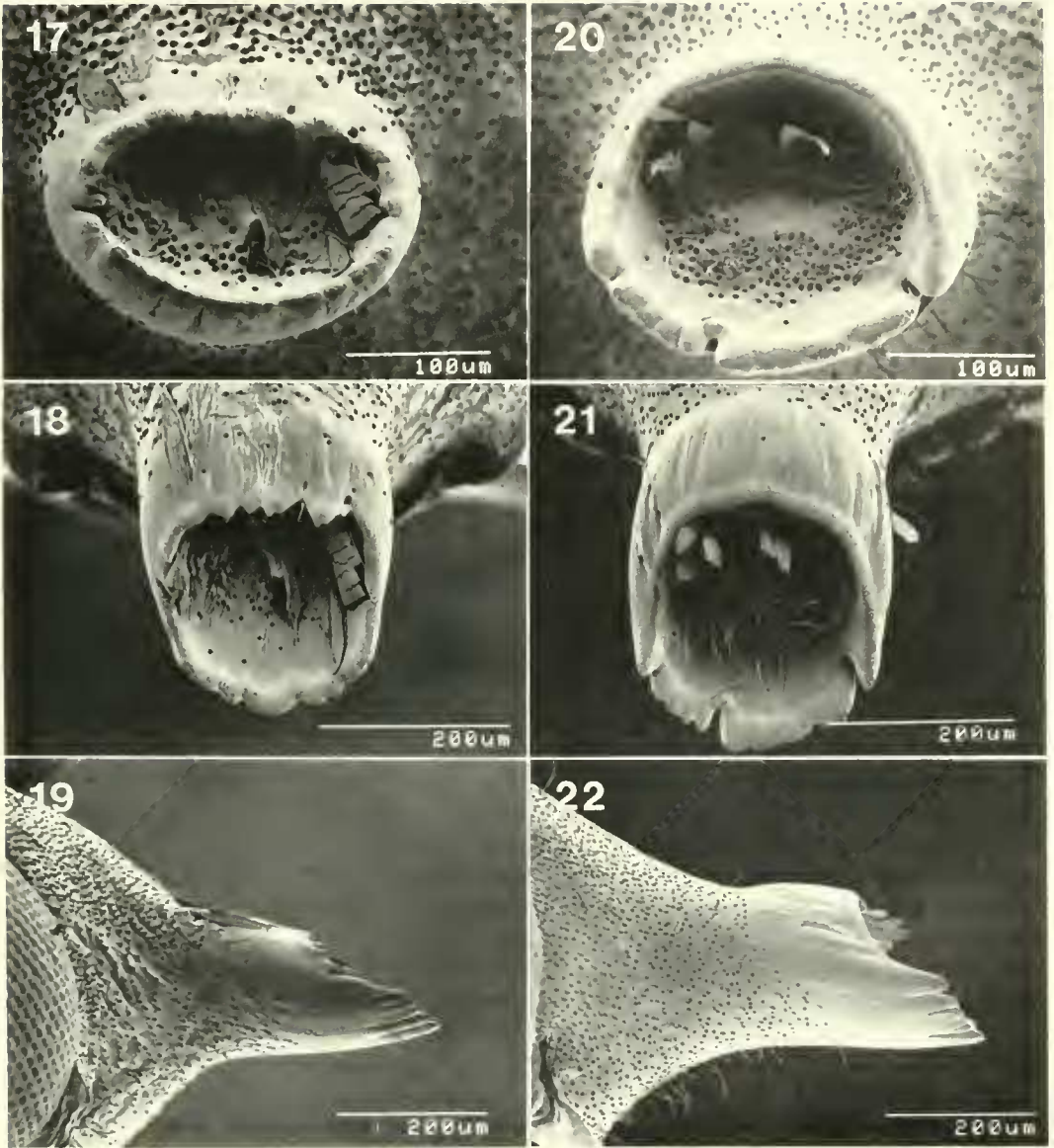


Figs. 11–16. Denuded head capsules showing ventral aspect (top row), mouthparts (middle row; g = galea, mp = maxillary palpus, pf = pilifer), and ventral view of frons protuberance. 11–13, *Coenochroa dentata*, paratype (USNM slide no. 57865). 14–16, *Coenochroa prolixa*, holotype. Scale bar = 250 μ m (Figs. 11, 14), 50 μ m (Figs. 12, 15), 100 μ m (Figs. 13, 16).

lowish brown, darker and orange brown anterior to cell. Male genitalia with costa of valve bearing serrate flange (Fig. 23); saccus very short; aedeagus with two strong subequal apical spines (Fig. 29). The serrate flange is unique to this species of the genus. Female genitalia with ductus bursae straight (Fig. 38); ostium with lip-like sclerotization.

Description.—Frons light brown, darker laterally in some specimens; protuberance

completely covered with scales except for extreme tip, form variable (see below). Labial palpus (Fig. 2) deflected, slender, about 3.3 times as long as eye diameter; basal segment about $\frac{1}{4}$ as long as second, third about $\frac{1}{4}$ as long as second; light brown with numerous scattered brown-tipped scales, overall color similar to frons. Maxillary palpus 3-segmented, minute. Proboscis greatly reduced. Ocellus rudimentary. Vertex, oc-

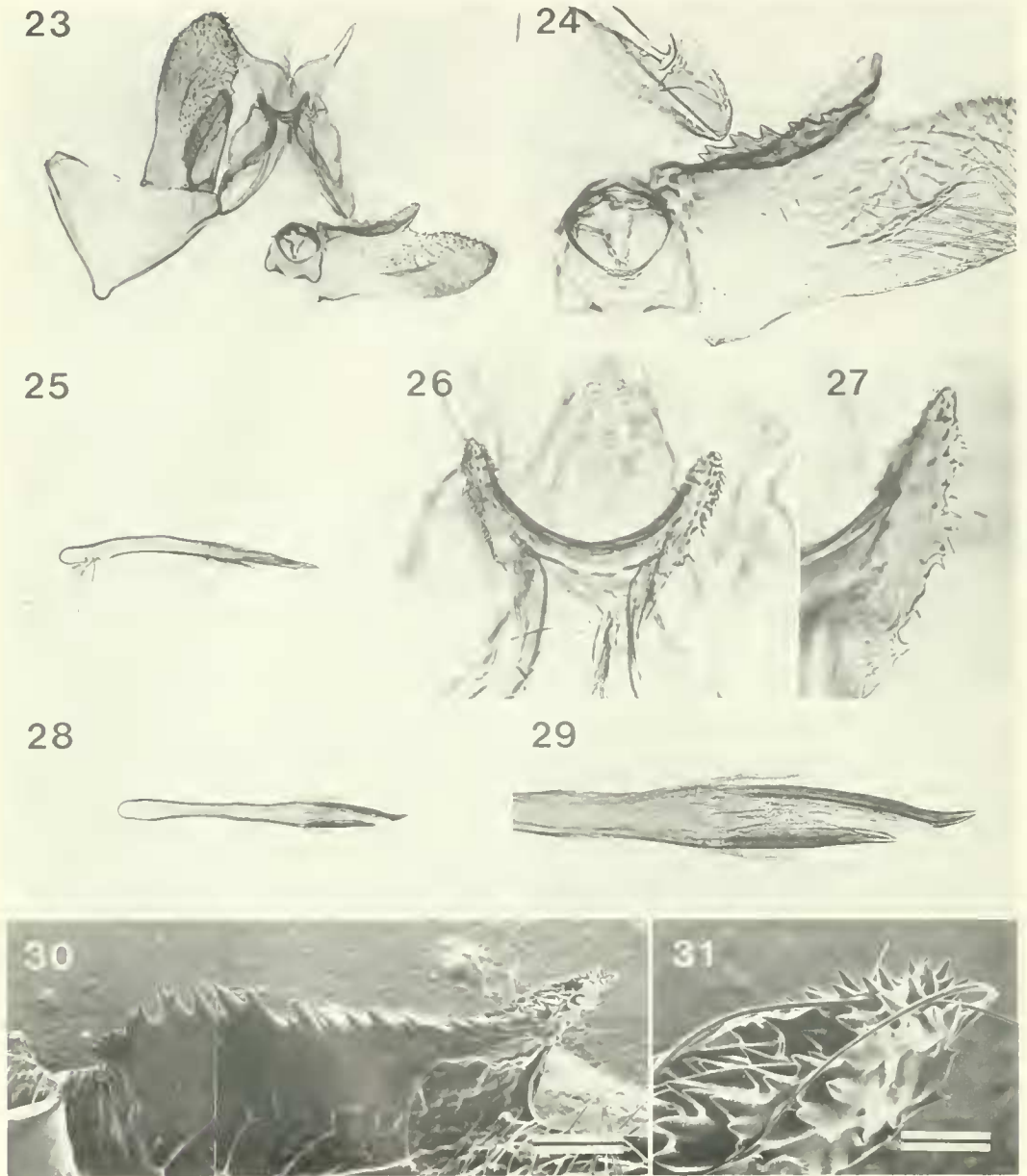


Figs. 17–22. Enlargements of frons protuberances in frontal (top row), anterodorsal (middle row), and lateral (bottom row) views. 17–19, *Coenochroa dentata*, paratype. 20–22, *Coenochroa prolixa*, holotype. Scale bar = 100 μm (Figs. 17, 20), 200 μm (Figs. 18, 19, 21, 22).

ciput, patagium, and tegula light brown.

Forewing radius about 8–9 mm; venation variable; R_1 usually free, sometimes stalked with R_{2+5} ; R_2 always stalked with R_{3+5} , the common stalk variable in length; R_{3+4}

stalked with R_5 , the common stalk variable in length; M_1 from upper outer angle of cell; M_{2+3} fused, stalked with Cu_1 , the common stalk variable in length, from lower outer angle of cell. Ground light yellowish brown,



Figs. 23–31. *Coenochroa dentata*, male genitalia. 23–36, holotype (J. Shaffer slide no. 2254). 27, paratype (USNM slide no. 57865). 28–31, paratype (USNM slide no. 57864). 23, male genitalia. 24, detail showing tubular anellus and serrate costa flange. 25, aedeagus, lateral view, same scale as fig. 23. 26, medial process of gnathos. 27, detail showing gnathos teeth. 28, aedeagus, dorsal view, same scale as fig. 23. 29, aedeagus tip, enlarged. 30, SEM, right valve, ventral view of costa flange. 31, same, detail of costa tip. Scale bar = 100 μm (Fig. 30), 25 μm (Fig. 31).

set with numerous scattered brown-tipped scales, with orange brown cast anterior to cell and posterior to A_2 , somewhat more yellowish cast on distal half of cell, between M_1 and M_{2+3} , and in A_1 fold. Veins indistinctly marked with white, best developed on cubitus and A_2 . Distinct brown spot at lower outer angle of cell.

Hindwing light brown, darker at apex. M_{2+3} fused, long stalked with Cu_1 , from lower outer angle of cell.

Male genitalia (Figs. 23–31) with medial process of gnathos U-shaped, arms minutely spinose, spines irregular, variable (Fig. 27), not extending onto midregion of U-shaped process. Anellus forming sclerotized tube around aedeagus, complete except at dorsal midline. Vinculum broadly triangular, hoodlike, midregion membranous except near saccus; saccus short, about as long as broad. Valve with costa carinate, projecting beyond midregion of valve, dorsal surface a horizontal somewhat concave flange bearing row of strong, irregular teeth on its inner margin (Figs. 24, 30, 31); valve unmodified elsewhere, tip rather broadly rounded. Aedeagus slender, about 10 times as long as maximum width, most slender just anterior to middle, broadest at posterior end; posterior end with a pair of strong parallel spines fused to aedeagus tube, left spine longer and curved at tip, right spine straight, about $\frac{3}{4}$ as long as left; vesica unarmed.

Female genitalia (Figs. 38–40) with ovi-positor triangular, about $\frac{2}{3}$ as wide at base as long, moderately setose; typical of genus. Apophyses straight, moderately robust; posterior about 1.25–1.5 times as long as anterior. Eighth segment with scattered moderate setae, except bare anterior third of dorsal surface, ventrally forming pair of triangular lobes which approach each other most closely at posterior of segment, here separated by roughly one-fifth of segment width; ventrally these lobes joined by membrane roughened with numerous minute, closely-set cusps; this membrane extending anterior to ostium and posteriorly to ovi-

positor lobes as 8–9 intersegmental membrane; 7–8 intersegmental membrane similarly roughened (Fig. 40). Ostium heavily sclerotized, posteriorly lip-like, broadly lobed, lateral margins curving anteriorly. Ductus bursae with anterior half membranous, longitudinally rugose; posterior portion smooth, flat, heavily sclerotized, gradually broadening posteriorly. Corpus bursae round to elongate, membranous, lacking signum; its surface set with minute, rather widely separated scale-like structures rather difficult to discern optically. Ductus seminalis from middle of ductus bursae.

Holotype.— δ , labelled: "Rio Brillhante M Grosso, Brasil 22. I. 1971 Becker leg."; " δ genitalia on slide 2254 J. C. Shaffer"; "Holotype *Coenochroa dentata* Shaffer" [NMRJ].

Paratypes.—3 δ , same locality as holotype, dates: 23-I-1971 (USNM slide 57865), [USNM]; 25-I-1971 (USNM slide 57864), [USNM]; 25-I-1971, Becker col. no. 13800, undissected [NMRJ]. 2 ♀ , same locality as holotype, dates: 22-I-1971 (J. Shaffer slide 2251), [NMRJ]; 23-I-1971 (USNM slide 57866), [USNM]. All labelled: "Paratype *Coenochroa dentata* Shaffer." Specimen deposition given in brackets.

Distribution.—Known only from the type locality.

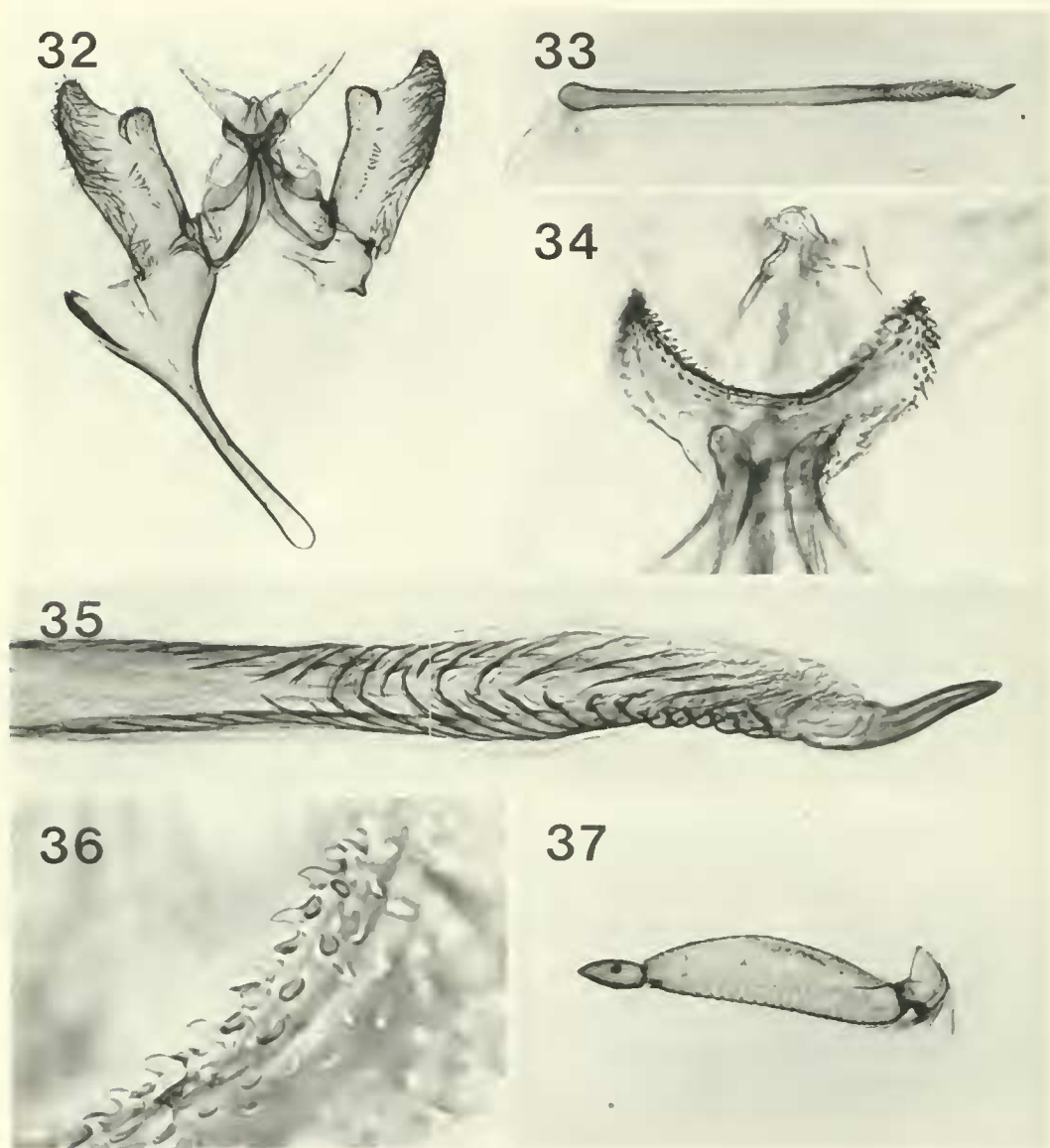
Etymology.—The specific epithet is an adjective derived from the Latin *dentata* (toothed) in reference to the toothed flange of the valve.

Coenochroa prolixa Shaffer,

NEW SPECIES

Figs. 3, 4, 8–10, 14–16, 20–22,
32–37, 41–43

Diagnosis.—Externally very similar to *dentata*, but with forewing ground pale yellow and not darker anterior to cell. Male genitalia (Fig. 32) with valve costa lacking serrate flange, terminating in blunt tooth; saccus extremely elongated; aedeagus with single apical spine (Fig. 35). Female genitalia with midregion of ductus bursae form-



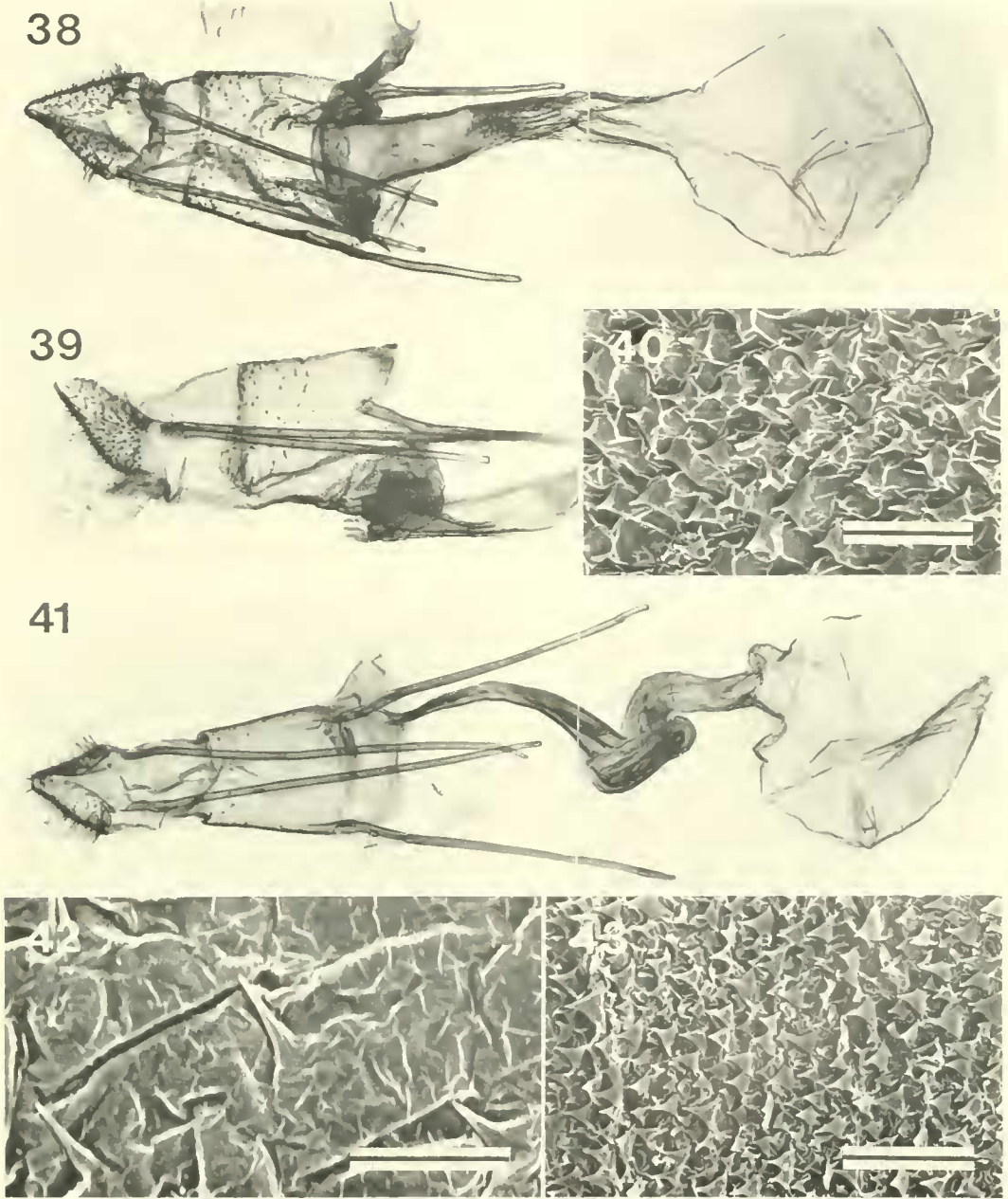
Figs. 32-37. *Coenochroa prolixa*. 32-35, 37, Holotype (J. Shaffer slide no. 2239). 36, Paratype (USNM slide no. 57867). 32, male genitalia. 33, aedeagus, same scale as Fig. 32. 34, medial process of gnathos. 35, aedeagus tip, enlarged. 36, detail showing gnathos teeth. 37, labial palpus.

ing sclerotized loop (Fig. 41). The single large costa tooth, elongate saccus, and ductus bursae loop are each unique to this species of *Coenochroa*.

Description.—Forewing radius about 8-9 mm; venation similar to *C. dentata*. Ground pale yellow throughout, set with

numerous darker brown and rust colored scales. Veins marked with white, most notably cubitus and A_2 . Distinct brown spot at lower outer angle of cell.

Hindwing nearly uniformly grayish white, somewhat darker at apex in some specimens. Venation as in *dentata*.



Figs. 38–43. Female genitalia. 38–40, *Coenochroa dentata*. 41–43, *Coenochroa prolixa*, paratype (USNM slide no. 57868). 38, paratype, dorsal view (USNM slide no. 57866). 39, paratype, lateral view (J. Shaffer slide no. 2251). 40, detail of 7–8 intersegmental membrane (slide 2251). 41, dorsal view. 42, detail of corpus bursae, inner surface. 43, detail of 7–8 intersegmental membrane. Scale bar = 25 μ m (Fig. 40), 10 μ m (Fig. 42), 25 μ m (Fig. 43).

Male genitalia (Figs. 32–36) with medial process of gnathos U-shaped, covered with numerous, minute, rather regular recurved teeth (Fig. 36), these extending onto midline of gnathos, though there much diminished. Juxta platelike, dorsally membranous with sclerotized portion emarginate, ventrally with a pair of short strong protuberances. Vinculum broadly triangular, hoodlike, membranous along midline; saccus extremely elongate, very slender, anterior end somewhat bulbous. Valve with blunt costal projection on distal $\frac{2}{3}$; straight single row of about 8–10 setae extending from base of projection toward base of valve, row parallel to and about $\frac{1}{3}$ distance across valve from costal margin; valve unmodified elsewhere, tip rounded. Aedeagus very slender, about 20 times as long as wide, distal $\frac{2}{3}$ with numerous parallel lateral diagonal folds (Fig. 35), on distal $\frac{1}{4}$ these folds meeting mid-ventrally to form pattern of chevrons; distal end of aedeagus with a single short stout medially angled spine; vesica unarmed.

Female genitalia (Figs. 41–43) similar to those of *dentata*, differing as follows: broad sclerotized ostium lip absent; sclerotized posterior portion of ductus bursae longer, extremely flattened, curved, not broadened posteriorly; midregion of ductus bursae forming a prominent, heavily sclerotized, thickened loop (Fig. 41).

Holotype.—♂, labelled: "Rio Brilhante, Mato Grosso, Brasil 23–27. X. 1970 V. O. Becker col."; "♂ genitalia on slide 2239 J. C. Shaffer"; "Holotype *Coenochroa prolixa* Shaffer"; [NMRJ].

Paratypes.—♂, same locality as holotype, date: 25-1-197(1), (USNM slide 57867), [USNM]. 6 ♀, same locality as holotype, dates: 25-X-1970 (USNM slide 57863), [USNM]; 27-X-1970, Becker col. no. 13304 (J. Shaffer slide 2256) [NMRJ]; 21-1-1971 (USNM slide 57868), [USNM]; 23-1-1971 (USNM slide 57869), [USNM]; 25-1-1971, Becker col. no. 13925, (J. Shaffer slide 2241), [NMRJ]; 25-1-1971 (J. Shaffer slide 2253), [NMRJ]. All labelled: "Paratype *Coeno-*

chroa prolixa Shaffer." Specimen deposition given in brackets.

Distribution.—Known only from the type locality.

Etymology.—The specific epithet is an adjective derived from the Latin *prolixa* (stretched out) in reference to the elongated saccus.

Apomorphies.—In *dentata* the costal flange and tubular anellus of the male genitalia, and in *prolixa* the elongate slender saccus and loop of the ductus bursae are derived features not shared with any other known *Coenochroa* species.

Immature stages and hosts.—Unknown. The habitus of *Coenochroa* species suggests that the larvae may be associated with grasses.

Discussion.—Dr. Becker (pers. com.) notes that these moths were collected by mercury vapor light in savanna habitat bordering a gallery forest.

These two species are extremely similar externally, and while the forewing color differences noted are useful, I have not found external structural differences that will reliably distinguish all specimens. The frons modification clearly separates the North American *C. californiella* and *illibella*, and obvious differences in the frons structure are seen in the scanning electron micrographs of the two specimens illustrated herein (Figs. 17–22). Unfortunately, optical examination of the remaining specimens suggests that these differences are possibly more a matter of individual than interspecific variability. It will be necessary to examine a larger series of specimens to determine if any frons characters useful in separating these two species exist.

ACKNOWLEDGMENTS

I am grateful to Dr. Vitor Becker for the opportunity to examine a portion of his collections, to Mr. Jan Endlich for assistance with photoprocessing and SEM work, and to Mr. Vichai Malikul for his comments on preparing the illustrations.

The holotype and selected paratypes are deposited in the National Museum, Rio de Janeiro, Brazil [NMRJ]. The remaining paratypes are in the National Museum of Natural History, Smithsonian Institution, Washington, D.C., USA [USNM]. The scanning electron microscope used in this study was supported in part by NSF Grant No. BSR-8511148.

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